



Original paper

## Strategy of the waste management in 6 North – West Region

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Received 18 March 2008; received in revised form 2 April 2008; accepted 2 May 2008  
Available online 1 November 2008

### Abstract

The aim of the strategy of waste management in Strategy of the 6 North – West Region is the development and implementation of sustainable management in this field. The directing lines are included in the Regional Plan of Waste Management (PRGD). It is put into practice on the package and domestic waste which can be assimilate in industry, commerce, institutions, and monitories their "way" from collecting to elimination, according to the legislative requirements.

*Keywords:* strategy, waste management, PRGD

### 1. Introduction

The North - West Region has a strategic geographical position (fig. 1), at the crossing of the North – South and East – West axes of the East Europe, being the admittance gate in Romania from Hungary and Ukraine. In national space, the 6 North - West Region is limited at South – West with the 5 West Region, at South with the 7 Center Region and at East with 1 North - East Region [1]. The region, formed of din 6 counties (Bihor, Bistrița - Năsăud, Cluj, Maramureș, Satu – Mare, Sălaj) of Romanian territory and occupies the **4<sup>th</sup> place** at national level, concerning the population and surface.

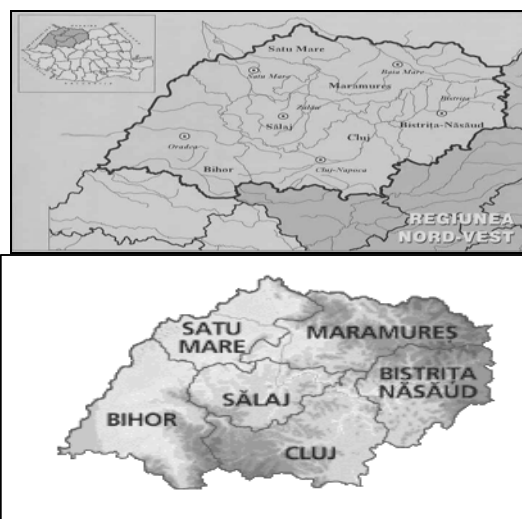


Figure 1. The geographical position of the 6 North – West Region

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Table 1. The total surface and population by the counties of the 6 North – West Region, 2007

The administered unity	Surface (km <sup>2</sup> )	Population in 2007
România	238391	21584365
North - West Region	34159	2725563
County of Bihor	7544	594131
County of Bistrița Năsăud	5355	316689
County of Cluj	6674	692316
County of Maramureș	6304	513000
County of Satu Mare	4418	366270
County of Sălaj	3864	243157

Source: National Institute of Statistics

## 2. Material and method

The way of managing the waste at national level is regulated by the Urgency Ordinance no. 61/2006, approved by the Law no. 27/2007, for modification and fulfilling of the Urgency Ordinance of the Government no. 78/2000 concerning the waste regimen, which transposes the Frame Directive concerning the waste [2, 3, 4, 5, 6].

Conformation with the EU policy concerning the waste management and reaching the targets assumed by the Accession Treatise in this field at the level of the 6 North – West Region, may be supplied only by responsible strategy of

waste management, synchronized for all counties of the region [7].

The main benefice is the creation the necessary frame of the development and implementation of a sustainable management in this field. The directing lines of the waste management strategy are included in the Regional Plan of the Waste Management (PRGD), **approved** by the Common Order of the Ministry of the Environment and Water Management and Ministry of the European Integration no. 1364/1499/2006 published in Official Monitor no. 232 and 232 bis from 04.04.2007 and **notified** to the European Commission [1]. The following types of waste are the object of this strategy: **municipal waste** (domestic and waste from industry commerce, and institutions) and **package waste**.

## 3. Results and discussions

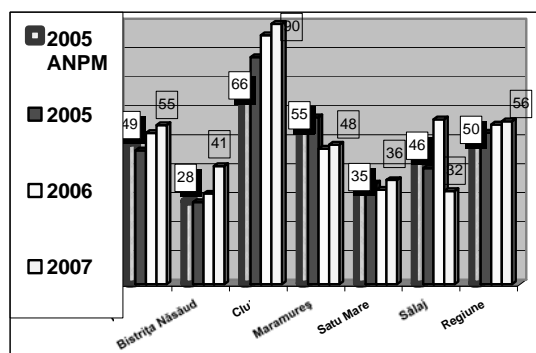
The data concerning the present situation in 6 North - West Region (quantities and installations of waste management) and **tendency of the relevant factors** represents "the basis" of the strategy of waste management. **The evolution of the region population** and its distribution is an important parameter of waste management, which directly influences the generated waste quantity (table 2).

Table 2. The evolution of the population by environments and counties from 6 North – West Region

County	Population in 2005 (statistics)			Population in 2005 (statistics)			Population in 2005 (statistics)		
	U	R	Total	U	R	Total	U	R	Total
BH	300514	295171	595685	300063	294919	594982	298825	295306	594131
BN	114978	202276	317254	116205	201480	317685	116139	200550	316689
CJ	465506	229005	694511	461251	228272	689523	464377	227939	692316
MM	303119	212491	515610	303097	212216	515313	301749	211251	513000
SM	169597	199105	368702	168915	198762	367677	174686	191584	366270
DJ	100118	145520	245638	100104	144848	244952	99353	143804	243157
Region	1453832	1283568	2737400	1449635	1280497	2730132	1455129	1270434	2725563

The evolution of the population in region in 2005, 2006, 2007 recorded a descendant trend concerning county and both environments population (fig. 2). **The degree of covering with sanitation services** is another factor which must be taken into consideration during the process of waste management.

Considering the objective of extension of the system of waste collection, this objective is very important because in 2009 the coverage area must be of 100 % in urban environment and minimum 90 % in rural one.



Source: Data delivered by ANPM, APMs, from statistic reports of the sanitation agents and local administration

Figure. 2. The evolution of the degree of sanitation services coverage by counties 6 North - West Region

**The separate collection of the package waste from the population** is another factor which must be considered for the strategy of waste management as consequence of the tight connection with the touching of the targets of package waste recycling/valuation.

**Elimination of the municipal waste**

- 1 conform storage house – Oradea;
- 35 non conform storage houses “b” in urban area, from which 5 stopped the storage;

In tables 3 and 4 is presented the situation of the separate recyclable waste from population in 6 North - West Region in 2005, 2006 and 2007. 817 storage spaces in rural that must be closed and ecologized up to 16.07.2009.

Table 3. The population that separately collect paper and cardboard waste

County/region	Number of that separately collect paper and cardboard waste		
	Year 2005	Year 2006	Year 2007
Bihor	2000	2500	128733
Bistrița Năsăud	0	15000	3200
Cluj	12000	24235	46678
Maramureș	0	0	129049
Satu Mare	0	150000	70200
Sălaj	0	0	41395
Total region	14000	191735	419255

Table 4. The population that separately collect glass, plastic and metal waste

County/region	Number of that separately collect glass, plastic and metal waste		
	Year 2005	Year 2006	Year 2007
Bihor	1500	2000	174637
Bistrița Năsăud	0	20000	7000
Cluj	12000	24235	46678
Maramureș	0	7000	150609
Satu Mare	0	150000	24800
Sălaj	0	30000	48637
Total region	13500	233235	452361

Source: Data base of ARPM Cluj – Napoca

**Existent management capacities**

- Recycling capacities:
  - about 10,000 t for **plastic** waste;
  - about 1,000 t for metallic waste.
  - about 400 t/year for paper and cardboard waste
- Co-incineration – Holcim Romania, factory from Aleșd.

**The strategy of waste management in 6 North – West Region**

In order to implement a responsible waste management at regional level a series of measures are needed to be taken:

**The waste collection**

Considering the targets for the coverage degree of sanitation services for 2009 of 100% in urban area and minimum 90 % in rural zones and that tendency of evolution is low in this field, the waste management planning must first take into consideration the extension of the collecting system through:

Supplying the domestic waste collection for whole population from the urban area and from 90% of population from the rural area using sanitation operators authorized by ANRSC

- Supplying resources and identification of founds for extending the domestic waste collection until 2009 in counties of Bihor (at least 100.000 inhabitants) and Satu - Mare (at least 35.000 inhabitants);
- Implementation of transitory solutions until the implementation of integrate systems of waste management in the counties of Bistrița - Năsăud, Cluj, Maramureș and Sălaj.

▪ **Separate collection of the recycling waste**

Table 5. The population included in selective collection of the recyclable materials

Issue	2008	2011	2013
Real population that must selectively collect paper and cardboard	1149152	1542103	1767507
Real population that must selectively collect plastic, glass, metal	386472	1200000	1560000
Share of the population that must selectively collect paper and cardboard (%)	43	58	67
Share of the population that must selectively collect plastic, glass, metal (%)	14	45	59

▪ **The waste storage**

Concerning the waste elimination, according to present regulations, the following actions and activities must be performed:

- Closing of the non conform storage houses by stages and realizing transfer stations;
  - 30 non conform storage houses class “b” in urban areas, that will stop the storage by stages:
    - during 2007 – 2009: 9 storage houses;
    - during 2010 – 2017: 23 storage houses;
- Closing and rehabilitation of the 817 storage spaces in rural area until 16.07.2009;
- Building conform storage houses foreseen for the region (one for each of the counties: Bistrița - Năsăud/2012, Cluj/2010, Satu - Mare/2010 and Sălaj/2013 and two in the county of Maramureș/2012).

▪ **Reducing the quantity of the biodegradable waste eliminated by storage**

- The number of the inhabitants which separately collect recyclable waste is very small compared to the target that must be reached in 2008. The trimester monitoring of the number of the inhabitants that separately collect recyclable materials (by type of material) is recommended.
- In the 6 North - West Region no progress was recorded concerning the reducing of the quantity of biodegradable waste at storage. Recommendation: interdiction of the green waste storage.
- Stopping of the activity of storage in none conform storage houses “b” class from urban areas was performed according to the calendar recommended by HG 349/2005.
- Presently, in this region no transfer station exists.
  - In this region exists only one conform storage house in the county of Bihor. For the other counties, realizing transfer stations and conform storage houses is necessary during 2010 - 2013. Supplying the composting of the whole quantity of biodegradable waste resulted from parks, gardens, (including waste from cemeteries) and markets – beginning with 2008.
  - Supplying capacities for the treatment of the biodegradable waste, other than waste from parks, gardens, cemeteries, markets within the region (in installations of composting, fermentation, mechanical and biological treatment, etc.) – for minimum 25,000 t – in 2010, for minimum 130,000 t biodegradable waste – in 2013.

In order to reach the targets of recycling/valuation of the package waste collected from population (55% recycling and 65% valuation until 2013), at regional level, is necessary to be implemented a **system of selective collection of these waste (plastic, glass, metal, paper and cardboard)**. The population that must selectively collect these wastes was established (table 5).

The following measures are necessary for this aim:

- Interdiction of the pure organic waste storage (waste from parks, gardens, cemeteries, markets) – beginning with 2008.
- Establishing a concept for the tax for the storage of the domestic biodegradable waste and putting into practice in areas where the alternatives of treatment of these types of waste already exist.

**4. Conclusions**

- The strategy of the region concerning the waste management is to develop the policies with the aim of implementing an integrated system.
- The degree of coverage with sanitation services is low. As consequence, establishing real measures concerning the increase of the degree of coverage with sanitation services is recommended in each county.

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